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bells—among them the square-shaped bells typical of Benin work—on the state drums found all along the Niger. The heavy iron chains and fetters, on the other hand, are most probably of Portuguese origin; they may have been brought in by slave-traders from the coast and have found their way up the river into the hinterland—the home of these precious trading goods.[1] Even the approximate date of the immigration of Tsoede and his band can be fixed with some accuracy. For on this point all the various genealogies of Nupe kings, obtained from quite different sources, tally. Giving the years of reign of every Nupe king, back to Tsoede, they all place the life of Tsoede in the same period, the early fifteenth century. It is interesting to note that the royal genealogies in two great neighbouring kingdoms, Yoruba and Ewe (in Togoland), also trace back the history of their royal ancestors to the same period, about 1400.[2] We may not be mistaken therefore in assuming that the beginning of the fifteenth century marks the end of a big wave of immigration which eventually led to the firm establishment of a number of new West African societies—kingdoms, in our three instances. For Nupe we can go farther than this. The same period saw the first contact of the Guinea Coast with Europe. In 1498 the Portuguese established themselves in Benin. But at that time they found a Benin already on the verge of collapse, the once powerful kingdom weakened and in obvious disintegration. Idah, once tributary to Benin, and master over Nupe as of many other dependencies, must have weakened with it. The myth of Tsoede's delivery of Nupe from the yoke of Idah may well contain a kernel of historical truth (whatever form the events may have taken in reality); the foundation of an independent Nupe kingdom may have been one of the historical results of the disintegration of Benin and its vassal states. The ancient contact of Idah and Nupe as well as the former sovereignty of Idah, are undoubtedly historical. The tradition of Tsoede is as well known in Idah as in Nupe. And when some years ago the *Atta* of Idah came to Bida—he was keen to visit that country of which the tradition of his tribe had so much to tell—a significant political imbroglio threatened the meeting of the Nigerian potentates. It arose from a question of precedence; the Idah man insisted on being given a higher seat than the *Etsu* Nupe, basing his claim on the unforgotten historical fact of Nupe's ancient vassalship to Idah.

This bare framework of facts—if facts they are—has absorbed many other features, legends, traditions, embellishments; which of them contain any historical truth it is impossible to say. But we are not concerned here to determine what is and what is not historical truth in the rich cycle of traditions round the figure of Tsoede. The myth as it stands, and as it is treasured by the people of Nupe, is to us a sufficiently significant social reality. It represents the typical 'mythical charter' of

[1] Exactly the same chains and irons have been found on the Gold Coast; small models of these fetters, of brass, iron, or gold, are sold as charms all down the river and the creeks of Southern Nigeria. A common origin suggests itself forcibly.

[2] See Bishop Johnson, *History of the Yoruba*, and D. Westermann (personal information).

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according to Nupe tradition, weaving was not originally a guild-organized craft, but a free profession carried out individually, like mat-weaving, for example, to-day. It became a 'closed profession' and a guild-organized craft when the Nupe kings imported craftsmen from the south, who brought with them their own special technique and who, aliens in Nupe country, kept to themselves, neither intermarrying nor coming much in contact with the rest of the population. These imported groups of weavers were *konú*, freed slaves of war. They form two of the three groups of weavers which we find in Bida to-day. The first is composed of people from Salu, a town in Yagba country, who were settled in Bida by *Etsu* Masaba. The members of this group, which is the largest of the three weaver guilds, live scattered over the whole town; their guild-head, however, used to reside in the *Etsu* Masaba quarter. The second *konú* group is of Yoruba extraction, and is concentrated in the *Etsu* Usman quarter. This group has representatives also outside Bida, in a number of Nupe villages: Kutigi, Enagi, Sakpe, and Dabbā. The third group of weavers, in the *Etsu* Umaru quarter, is composed of Nupe proper. It is a very small group, consisting only of one compound. This Nupe group of weavers forms a section of a large kinship group which comprises farmers, who live outside Bida, as well. They trace their profession to a man who came to Bida from Rabá, as a *bara* of *Etsu* Umaru. Originally a warrior, this man later settled in the town and learned weaving from a *konú* craftsman. At that time, I was told, weaving was a lucrative and highly respected profession. Weaving has been the profession of his family for three generations now, and the family heads are received at the court and treated as official representatives of their group like all heads of guilds or guild sections. Small groups of weavers of Nupe extraction are also found in various villages in the Emirate. Their labour organization closely resembles that of this last group of weavers, but they remain outside the Bida guild system.

The technique of weaving is the same in all groups. Their loom is of the narrow upright type, worked with pedals, which is common all over Northern Nigeria. These looms produce narrow strips of cloth 5 inches wide. The looms are placed in a half-open shed, six to seven in one row, in the inner courtyard of the compound, each loom being worked by one man. The weavers have to buy a large proportion of their tools from other craftsmen: the shuttle and the wooden posts on which the loom rests, and which are frequently beautifully carved and painted, are made by the carpenters; the iron rods used as pedals and the iron bar upon which the finished strips of cloth are wound, are made by the blacksmiths. Only the weaver's reed is produced by the weavers themselves. A complete outfit for one man costs from 6*s*. to 12*s*., according to whether cheap plain or expensive carved wooden posts are used. The Bida weavers use mostly thread of European manufacture, both plain and coloured, and only very rarely native-ginned and -dyed cotton. The village weavers use mostly the latter kind.

The men who occupy a common workshed are members of the same family and household group. In one house, for example, I found

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462 386 563 476 maintained in a patrilineal and patrilocal society. The explanation is supplied by the endogamous organization of the *konú* groups, which marry mostly into other *konú* families of the same or a neighbouring village. In one or two cases in which intermarriage of a *konú* woman with a Nupe man has taken place, the wife took her craft with her and is practising it in her new home, but now as a completely individual craft, without the help and co-operation of her fellow craftswomen.

462 323 438 317 Pottery is widespread in Nupe, both in Bida and in the villages. Certain places are famous for their pottery, such as Jebba Island, Baro, Badeggi, and also Bida. The best clay for pottery is found near the river, and this may explain the superiority of the pottery produced in these localities, which are all situated on or near the river. But there exists also a regular trade in potter's clay; women from Badeggi take the excellent clay which is found in that district to Bida and sell it there to the local potters. Other inland places, even rich, busy villages such as Kutigi and Mokwa, have no pottery at all. But Mokwa is only ten miles from Jebba, the great pottery centre, and Kutigi market, on the main trade-route to the west and south, is amply supplied with pots from everywhere. Facilities for trade and communication thus make for specialization, and tend to eliminate inferior local production—a point to which we shall return in another context.

462 323 In Bida, too, we find a certain specialization in pottery. Clay lamps and the small pitchers which the Mohammedans use for their ablutions are made everywhere in Bida. Other kinds of pots are made in one *efu* only (the *efu* of the *masagá*, which is situated close to the river). These are large, wide pots used for cooking; tall pots, shaped somewhat like a column, which are in reality three round pots placed on top of each other and formed into one large receptacle—Nupe men and women store their clothes in these pots, which are called *etso*; and small round platters which, broken into small pieces, are used for making tessellated floors. We note that the women are here producing the 'raw material' for another typical woman's work, the making of floors. The making of these pots and platters is generally recognized to be much more difficult and to involve more special training than the manufacture of clay lamps and pitchers. The secret of the technique—for it is, in Nupe eyes, a secret—is only possessed by the women in three compounds in the glass-workers' quarter.[1] Mothers teach their daughters this technique, and we are, again, faced with the question how to account for the limitation of a technique which is transmitted in the female line to a local group formed according to the rule of patrilocal residence. The answer is more or less the same as in the case of the women dyers. The women potters from the *masagá fu* mostly marry into families of the same or a neighbouring *efu*. The girls who occasionally marry into the *masagá* quarter from outside are instructed in the art of pottery by their mothers-in-law. The daughters of the women potters, however, who marry outside (I recorded

[1] This technique involves the use of a crude potter's wheel—the only known case in Africa. Of the different groups of women potters in Nupe only those in Bida and Badeggi use this device. For the description of the technique I must refer to a future publication.

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The present study can only claim to be a first attempt in field experiments of this kind, carried out under conditions which did not allow a more extensive investigation. Yet the question could be raised how far the evidence obtained in experiments which were carried out on so small a scale and in so special a setting can be considered significant and representative of the culture at large. In order to secure a representative group I selected for my experimental subjects students who came from a great many different places in Nupe and Yoruba respectively. The two experimental groups were matched as closely as possible with regard to age, school standard and the surroundings from which they came. In Nupe I was able to work with larger groups: with 60 boys of the age of 12–18 who were taken from every school form, i.e. who had been students of the Middle School for periods varying from 1 to 5 years. Now, as I shall show later, the experiments admit to a certain extent of statistical interpretation, i.e. the responses to certain essential features in the story or the pictures can be classified and treated quantitatively. This statistical evidence allows us to gauge the extent to which the 20 Yoruba subjects can be considered a significant and representative sample. I found that the means for the various responses calculated for the small group correspond very closely to the means arrived at for the large group; in other words, there exist no unequally distributed marked individual differences which would invalidate the results obtained among the small group. Since school standard and age do not correspond very closely in Nigerian schools, the statistical evidence can moreover be used to check independently the influence of age and educational standard. As regards the age factor, we find a slight rise in the appreciation of factors of reasoning and emotional facts corresponding to age; a fairly unchanged appreciation of situational facts; and a fall in the appreciation of moral ideas from the age of 13–15. More important for this investigation is the educational factor; here the statistical evidence proves conclusively that the difference in educational standard has no influence on the psychological responses and attitudes examined in these experiments.

III. THE CULTURE DIFFERENCES

Before going into details I must say a few words about the two cultures and the nature of their diversity. The two groups speak different languages which, however, belong to the same linguistic group (of so-called *Sudanic* languages). Their economic system and their general social organization are similar. Yet other aspects of their culture, aspects which may be held to express more specifically psychological trends or tendencies,[1] reveal a fundamental difference. The religion of the Yoruba is characterized by an elaborate and rationalized hierarchical system of deities, each of which has its specific, specialized duty and function. The Nupe have no such system; their religious beliefs centre round a concept of magic of the 'mana' type, i.e. vague, abstract, impersonal power. In the rich, highly developed realistic art of the Yoruba the main *motif* of pictures, plastics and wooden images is the human figure; religious and mythical emblems of this kind play an important part in their life. Again,

[1] See my article on "The Typological Approach to Culture" (4).

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the Nupe have nothing of the sort, their art is imageless, they have but crude wall paintings, and their strength lies in ornamental, decorative art. Also the Yoruba have a strong sense for pantomime and drama, for which again there is no parallel among the Nupe.

IV. The story experiment

The story was read to the students at 8 a.m., i.e. during their first class. At noon they were asked to relate the story for the first time (each boy by himself) and after one week for the second time. Each time the leader of the experiment wrote down the story as it was told. The story (in free translation) runs as follows:

> Long, long ago there were a man and his wife. They had two children, sons. When these sons had grown up, they saw a beautiful girl. They both made friends with her, and loved her very much. They loved her with one heart. But the girl did not love the elder brother, she only loved the younger. Thereupon the elder brother went to the younger and told him to give up the girl. He said: "I am the one to marry the girl for I am your elder brother." Thus he spoke. But the younger refused. They quarrelled a great deal till the elder brother became furious. When the night fell he went to the hut where the younger brother was sleeping and killed him with his sword, he killed him with one stroke. When the people heard the news they said: "He did an evil deed, God will revenge it." But the girl cried, she cried for twenty days and her heart was full of pain. When she had finished crying she left and went to another place. Nobody saw her again.

The responses which the contents and structure of the story evoke in the experimental subjects can be analysed under four or five different headings: There are points in the story which stress emotional reaction; points which bear on moral ideas; and points which appeal more specifically to reasoning, i.e. crucial points in the logical progress of the narrative. The text also contains certain set phrases and formulae; and, finally, a number of situational or circumstantial details. Obviously, these different categories in which the features of the narrative can be grouped must overlap to a certain extent. But it is just this overlapping, the application of different and even divergent aspects of interpretation to the same features, which will reveal to us most strikingly the different psychological attitudes with which the two groups approach the data presented in the narrative.

(1) *Set phrases and formulae*

The beginning and the end of the narrative, and one or two other phrases, represent more or less fixed formulae typical of all such stories. These phrases were in most cases repeated literally, both by Nupe and

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Yoruba. In the reproduction of one formula-like phrase, however, we grasp a first striking difference between the two groups. The phrase in question is the sentence '"God will revenge it"', spoken in the story by the people when they learn of the crime. This set phrase, which is commonly used in a context of this kind, is repeated verbally by 10 Nupe (13 in the second recall); 6 (3) Nupe leave it out altogether; and 4 (4) substitute another sentence of the same meaning. Among the Yoruba 5 (5) quote literally; 3 (1) leave it out; and 12 (14) substitute another sentence. Yet the new sentence which the Yoruba substitute does not merely reproduce, with different words, the same meaning. In 5 (10) Yoruba reproductions the changed phrase introduces an altogether new element, namely a rational explanation of the expression '"God will revenge it"', uttered under these particular circumstances. Thus (Y 8), in the first recall, lets the people speak as follows: "The elder brother has done wrong; we cannot revenge it, God will revenge it." In the second recall this reasoning is more cogent still: "The people said: 'They should not do anything about it; God will punish him.'" Or (Y 12): "They said, 'One should leave the elder brother alone. God will judge him.'" Or (Y 15): "His sin is very grave; no one but God can judge him." Only two Nupe in the second recall (none in the first) felt it necessary to supply this additional rational link which turns a stereotyped phrase, quoted almost automatically, into a logically sound judgment.

(2) *Rational aspects*

In the stress which is laid upon such rational links and logical elements lies in fact the most fundamental difference between the Nupe and Yoruba version of the narrative. A characteristic example is the reproduction of the third sentence of the story ("when these sons had grown up"), a 'crucial' sentence in so far as it supplies an essential rational link in the narrative; obviously the brothers must have grown into men before they could have had their love affair. Now among the Nupe only 3 mentioned this fact in the first, and 4 in the second recall. The corresponding figures among the Yoruba are 17 and 18. But even the most salient and most essential points in the story, the preference of the girl for the younger brother and his refusal to renounce his claims, points which are missing in none of the Yoruba reproductions, are neglected by the Nupe: 9 Nupe in the first and 5 in the second recall leave out one or the other of these facts on which the whole development of the story depends. Similarly, the quarrel between the two brothers which supplies the motive for the murder is mentioned by 3 (3) Nupe only as against 12 (14) Yoruba.

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But, as we have seen already, the Yoruba do more than merely observe the existing rational connexions in the story. They introduce new ones, or try to render existing connexions more striking. For instance, towards the end of the story there is the sentence "when the girl had finished crying, she left the town". Among the Nupe 19 (16) reproductions include a sentence the meaning of which closely corresponds to the original; among the Yoruba 2 only kept to this rather weak connecting link; 7 (8) placed the two sentences simply side by side: "she wept for twenty days, and then she ran away"; and 10 (9) turned the connexion into a sentence such as this: "when she thought of all this sadness that existed in this matter, she left the town." Now the most interesting fact is that this sentence is a typical expression of Nupe 'mentality'. When I first composed the story I had placed the two sentences side by side: "the girl cried for twenty days. Then she left the town." But my two Nupe informants, with whom I worked out the text, objected to this expression, and insisted on bringing in the sentence "when she had finished crying". This sentence was then simply taken over into the Yoruba text. But in the experiments most of the Yoruba rejected it as we saw, left it out or, more characteristically, reformulated it, thus strengthening the logical cohesion of the story.

One could try to establish statistically this difference with respect to the stress laid on elements of reasoning. Contained in the story are four sentences which represent specifically rational or logical links. Every rational link which appears in the reproductions, both an original rational link which was already contained in the story and any new, additional 'rationalization', is scored as 1. The means for the 20 experimental subjects then amount, among the Nupe, to 2·3 (2·4), and among the Yoruba to 5·5 (6.0), i.e. the Yoruba figure is more than twice the Nupe figure, and considerably above the theoretical value of 4.

(3) *Situational aspects*

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The retelling of the Nupe, although neglectful of the rational connexions embodied in the text, does itself introduce certain new, additional links and connexions. These links stress situational, circumstantial facts, details of place and time, which are of little importance for the logical progress of the story. They may amount only to irrelevant remarks, filled in between sentences, such as "this went on for some time", or "thus they lived", etc. Or they may completely replace the logical connexion, as in the version of (N 7) who, leaving out the quarrel of the two brothers, jumps from the statement about the girl's preference for the

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younger brother to the scene of the murder, by simply stating: "one day, at night, the elder went to the sleeping hut of the younger...." N 153

In other cases, however, the situational and temporal details tend to build up a vivid, concrete picture of the happenings in the story. Thus, for example, 4 Nupe (6 in the second recall) mention that the brothers were 'travelling about' when they saw the girl; 3 (5) let the brothers meet the girl 'in town'; (N 25) adds the information that the brothers 'afterwards returned home'. And after describing the murder 3 (6) Nupe continue the story as follows: "On the morrow", or "when it became day, the people heard of the crime." Yet these connexions never strengthen the cohesion of the narrative as such. On the contrary, one gains the impression that the story dissolves itself into a number of different scenes and situations. 195

This difference between the tense, logically convincing way in which the Yoruba reproduce the story, and the loosely knit Nupe way of retelling which is concerned more with details of situation and temporal sequence, becomes most evident in connexion with the 'situational' item in the story, that the murder was done 'at night'. Among the Nupe this is in itself an important feature which is given a prominent place in the reproduction. Thus: Y N ● 171 ● 153 195

(N 54) The younger brother refused to leave the girl. The elder left the matter then. Till one day, at night,....

(N 60) The younger brother said: "No." Then it became night. The younger brother slept in his hut. The elder took his sword, and killed him on that night.

But among the Yoruba the reference to the night is clearly a minor detail which is pushed into a relative sentence and is quite overshadowed by the really relevant fact, which is the connexion between the anger of the elder brother and the murder.

(Y 6) The two brothers quarrelled terribly. The elder pulled out his sword and went to kill the younger brother where he slept.

(Y 9) The brothers quarrelled, and when night came the elder took his sword. He went and cut off the head of the younger brother because he had spoiled his heart.

(Y 15) They quarrelled about the girl. So much that at night the elder took his sword, went to the place where the younger slept and attacked him with his sword till he killed him.

(4) *Emotional and moral aspects*

In this experiment, rather surprisingly, the emotional factor seems to go hand in hand with the reasoning factor. Emotional and rational aspects do not seem to represent divergent or even independent principles; the more 'rational' Yoruba stress at the same time emotional reaction; and Y N 152 171

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Y N 152 171 the Nupe, neglecting rational connexions, seem to neglect the emotional aspect as well. The explanation is that the facts and events which bear on emotional reactions may be interpreted as rational motivations of the acts related in the story. This is in fact how the Yoruba approach, and utilize, the emotional aspects of the narrative.

N 152 Yet the comparative weakness of the emotional factor in the Nupe reproduction is not due to the Nupe lack of appreciation for rational connexions. The emphasis on emotional factors as far as it is evident in the Nupe version is not correlated with factors of reasoning; the appreciation of such elements as the beauty of the girl, her sadness after the murder, or the strength of the brothers' love, is not turned at once (as is the tendency among the Yoruba) into an interpretation of motives and reasons, but seems to represent a specific, self-sufficient trait. To a certain extent the emotional response among the Nupe appears linked with the tendency to dissolve the narrative into a series of concrete situations. (N 25) is a good example: he mentions that the brothers 'returned home' after they met the girl; he reproduces the girl's avowal of her love for the younger brother in the wrong place, but again in a typical 'situational' context: "when the girl learned of the murder, she said that she had only loved the younger brother"; he lets the people speak as follows: "This is what he did, God will revenge it." But he repeats twice how strongly the brothers loved the girl, and although he does not connect the girl's sadness with her disappearance, he does not omit, as many other Nupe did, the girl's 'aching heart'. But the cases in which I could find a similar correlation are few, and it seems possible that the emotional bias among the Nupe constitutes an independent, secondary psychological characteristic which may only run parallel to what we discovered to be the dominant trait in Nupe reproduction: stress on situational and temporal connexions.

Y N 152 577 171 The response to the moral ideas which are referred to in the narrative is again bound up with rational factors. The reinterpretation and rationalization of the statement "God will revenge it" which we discussed above is a point in question. But the attitude to the moral statements adds a new characteristic to the psychological differentiation of the two groups. All the Nupe reproductions keep closely to the meaning of the sentence "he has done an evil deed", The Yoruba reproductions on the other hand are much more varied and depart much more freely from the original. Here are a few Yoruba versions:

First recall:

(Y 6) The people said: "he abused his power over the younger brother."

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(Y 12) It surprised the people (to hear) what the elder brother had done. They said, "one should leave him alone, God will punish him."

(Y 18) When the people learned of the deed, it pained them very much. They said: "God will revenge it."

Second recall:

(Y 1) The people judged the elder guilty and evil; but God would punish him.

(Y 2) and (Y 5) The people were very sorry for the boy, but (they said): "Our Lord God will punish him."

(Y 12) The people said: "The elder should have left the younger alone. God will punish him."

To the Nupe then, the unspecific and abstract reference to the wickedness of the deed seems natural and satisfactory. The vague, schematic connexion which the story establishes between the wrong deed and the supernatural punishment, seems to satisfy their attitude towards moral value. The Yoruba, on the other hand, feel the urge to define the nature of the evil deed more closely and more explicitly. They weigh specific deed against specific punishment. Their attitude to the moral judgment is the same as to all the other features of the story: rational, and intent on clear logical connexions.

(5) *Arrangement and order*

It is interesting to study the question of the order in which the events of the story are related and remembered. In the first recall the Nupe frequently (in 11 cases) rearrange this order, but only 2 Yoruba do the same. The explanation, however, cannot be that the precise, logically coherent narrative keeps more closely to the original story, for in the second recall the figures for the rearrangement of order are equal in both groups: i.e. the Nupe figures rise by 5, to 16, and the Yoruba figures by 14, from 2 to 16. Evidently, Yoruba recall, relying more on logical connexion, is apt to abandon the external form, whereas the loose, devious way of Nupe retelling which in the second recall is not much more free than in the first, may be more tied to the external order of events as to the only framework establishing coherence.

Before I pass to the picture experiments I will quote two full stories, one from the Nupe and one from the Yoruba, to illustrate the fundamentally different attitudes with which the two groups approach their task:[1]

(N 11) Long ago, there lived a young man. He had a brother. They were elder and younger brother. They lived, they lived, till they saw a young girl. The girl was very beautiful, they loved her with one heart, both the elder and younger brother loved her.

[1] Other full quotations of the story will be found in *Africa* (5).

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One day the elder said to the younger he should give the girl up, "because I am the elder". The younger brother said he would not give her up. Although the other was the elder he would not give her up. But the elder brother left the matter then, till night fell, then he went to the hut where the younger brother slept and killed him with a sword. When the girl saw this she cried for twenty days and her heart ached. The people who heard this said, what he had done was bad, God will revenge it. When the girl had finished crying she went to another place, nobody saw her again.

(Y 13) Long ago, there lived a man who had a wife. They had two children, sons. When they grew up they saw a girl who was very beautiful. They loved her, but the girl loved the younger more than the elder. When the elder brother realized this he said to the younger: "You must give up the girl, for I am your elder brother and I ought to marry her." When he said this the younger refused and they quarrelled so much that the elder brother took his sword, went to the younger, attacked him with his sword and killed him. When all the people heard this they said: "An evil deed has been done by the elder brother." They said: "Nobody should touch him, for God will judge." The girl cried for twenty days. Her sadness was so great that she left the town, and nobody saw her again.

V. The picture experiments

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I showed six pictures of different topics which varied in complication and distinctness. Each picture was exposed for about 10–15 sec. The experimental subjects were asked first to write down (in vernacular) what they had seen, after every picture. After a week's time they were asked to relate what they remembered, and this was written down by the leader of the experiment. The photographs represented:

(1) Two leopards in the bush.

(2) A black horse with a native groom in European garb, in an open field.

(3) A native in Mohammedan dress (which is common everywhere in Northern Nigeria), sitting on a table on which stands a native clay lamp.

(4) An oasis in the desert, showing a camel in front of a date-palm and two Arabs. (This was a rather dark and indistinct picture.)

(5) A mosque with a huge crowd of people in front. (A clear but somewhat complicated picture.)

(6) A bush fire (dark, very indistinct, in some respects corresponding to the familiar 'ink-blot' picture).

(1) *The background of experience*

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A first difference in the reaction of the two groups is due to the fact that in the description or interpretation of certain features in the pictures the different background of knowledge and practical experience characteristic of each group comes into play. Although the general cultural background of the two groups is the same, there exist naturally certain specific details of culture which are different in the two groups, and which to a certain extent enter into the description of the pictures. Thus quite a number of Yoruba called the clay lamp in the third picture a 'pump'. This

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rather surprising interpretation became clear in the explanation which one Yoruba gave; he described the object as a "clay lamp with a handle like the pump at the railway station". Ilorin, where the Yoruba experiments were made, is on the railway; the place where the Nupe experiments were made is not, and this explains why this particular interpretation occurred only among one group. Among the Nupe we have, instead of the 'pump', a 'bicycle wheel', or the 'handle of a motor-car'. Both Nupe and Yoruba seem to derive satisfaction from bringing in these very special, and up-to-date *motifs* of interpretation. The *motifs* contributed by this specialized knowledge tend, however, to disappear in the second recall and to be replaced by an interpretation of a more general character. For instance, there were 6 'pumps' in the first description but only 3 in the recall: one 'pump' was replaced by the ordinary 'clay lamp', one was left out altogether, and one reappeared in the following disguise: "a man kneels down (obviously for prayer) under a tree which bends down like the arm of a water-pump."

But the real, psychologically relevant, difference between the two groups does not lie in the different material or content of experience which is utilized in the description, but in the different psychological organization of this material. Among the Yoruba, to start with, the details contributed by special knowledge serve as centres for an interpretation which endeavours to lend a unitary and consistent *meaning* to the whole picture. A few examples will explain what I mean.

(Y 3) An old man wearing turban and white gown, kneeling near something that looks like a pump which has a hole and is bent. The man is repairing the bottom of the pump.

(Y 6) A blind man, wearing a turban and big white gown, pumps water from a fountain in order to drink it.

In the recall we may find a more or less complete reinterpretation: the first example brings the tree which looks like a pump, and the second gains completely new shape:

(Y 6) A Mohammedan teacher, wearing white turban, sits and lights a lamp in front of him, he places it on his right-hand side (obviously in order to read).

We see that, although there are changes from description to recall, the factor of consistent meaning still determines the interpretation. Now among the Nupe there is surprisingly little of such attempts to read a meaning into the picture.

(N 2) A man is kneeling, he wears a beautiful white turban, his eyes are closed. There is something in front of him which looks like the handle of a motor-car.

(N 12) There is an old man who has only one eye. He is sitting and doing something with a bicycle wheel.

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N 151 153 Certain attempts at a consistent, unitary meaning, do exist also among the Nupe. For instance:

(N 3) A man with a waterjug, he is holding it and making his ablutions in a hut.
(N 10) A man with a white turban is sitting, his forehead bent, worshipping an idol.

But these meaning-oriented interpretations are (1) in the minority; (2) the consistency is not established really fully and satisfactorily: e.g. the 'man in turban' would be a Mohammedan; still he is said to worship an idol; (3) the meaning evaporates in the recall. Here are the reproductions of the two meaning-oriented Nupe descriptions which I have just quoted:

(N 3) A man sitting in a beautiful room, with a big water-jug, he is crouching.
(N 10) A man with white turban is sitting, he is crouching, he is watching something in front of him which looks like a motor-part.

(2) *Imagination*

● N Y 151 153 ● 171 From the examples quoted above it will be seen that the positive or negative part which the meaning factor plays is not correlated with predominance or lack of imaginary addition. Quantitatively, the contribution of imagination is the same in either group. The difference lies again in the part which imaginary details or additions play in the organization of the material. Among the Nupe they just constitute additional items and there is no tendency to weld all the details into a unitary interpretation. Thus, in the picture of the horse and the groom:

(N 13) There is a European horse standing together with a European near a small hill (!)[1] A few men stand behind the European (!), they look like soldiers and are coming towards him.

Among the Yoruba such mere addition is the exception. The rule is represented in the following example:

(Y 13) A horse near a river (!). It looks as if it is going to be washed. It has a bridle in its mouth, and the man who brings it to the river stands with the horse, he does not hold it but only looks at the horse.

In the recall the orientation towards meaning is intensified by introducing still another imaginary detail:

(Y 13) A man taking a horse to the stream. He stands there trying to pull the horse by the rope (!), but the horse does not move away from the stream. The man is watching the horse.

(3) *Meaning-oriented response*

The essential difference in the psychological responses of the two

[1] Exclamation marks indicate imaginary additions.

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groups lies then in this: the Yoruba are meaning-oriented; they weave into most of their descriptions and recalls a unitary meaning; the Nupe tend to present the facts which they notice or remember in a purely enumerative manner. Now, *meaning* is, generally speaking, a recognition of relation, more particularly of a relation bearing on purpose and causality. In the picture of the horse, for example, only 6 Nupe descriptions and 3 recalls (against 15 Yoruba) attempt to establish the simplest relation on which a unitary meaning could be based, namely a relation which accounts for the presence of the two figures in the picture, the horse and the man; i.e. describes them as a horse and its master, or a horse and its groom, etc. Or, in the picture of the two leopards: 10 Yoruba read a meaning into the picture, i.e., place the data in an explanatory relational context, and describe the two animals as waiting for their prey, as playing together, or as cohabiting. Only 2 Nupe descriptions (1 recall) try a similar solution.

Cognition of meaning and relation in this sense may, however, refer not only to figures and events presented in the picture, but to the picture itself *qua* picture. Some of the Yoruba approach their task in this fashion, and attempt to relate the picture as an item in itself to other facts of knowledge and experience. They try, for example, to explain the fact that such and such a picture had been shown; they understand the picture in the sense of their school-book illustrations, i.e. as an invitation to relate, in the manner of a school examination, everything they know about one or the other item illustrated in the picture. Thus in the picture of the horse and groom:

(Y 9) The horse is an animal that lives with us people. We supply it with grass for food, and we ride it for pleasure or something else. We use it as a pack animal, and also for farming. We harness it.

In other cases, the Yoruba seem to be struck by certain peculiar features in the composition of the picture, and try to explain them, by quite an elaborate process of reasoning, as a result of the formal arrangement:

(Y 20) There is a camel with big loads on his back. He stands near a palm-tree. If one does not look carefully one may think he has no head. But he has one. He lifts his head up to the palm, so that the head is level with the palm-tree. That is the reason why we see only the palm-tree. There is a man close to his hind-leg, he is squatting, and there is a man standing in front. These men are men from the East, because you can see they cover their heads with a cloth.

This attitude of explaining and reasoning which deals with the picture as an object in its own right is completely absent among the Nupe.

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(4) *Exactness*

The examples will have revealed already that the cognition of meaning does not correspond in any way to exactness of perception or memory in the sense of fidelity to the original. Among the Yoruba the proportion of meaning-oriented interpretations increases from description to recall, among the Nupe it decreases. That means the recall emphasizes still further the type of interpretation manifest in the description. But the main point here is that imaginary additions also increase and decrease in the same proportion. The recall of the Yoruba is therefore, from this point of view, less exact than the recall of the Nupe. The enumerative type of perception and memory on the other hand is less exact in other ways. The Nupe frequently confuse the pictures in their memory and reproduce in the recall descriptions in which the features of two pictures appear combined. This combination is never an improvement from the point of view of consistency of meaning. There is no evidence for this fusion of memory pictures among the Yoruba. The Nupe also forget pictures completely much more frequently than the Yoruba. The first picture was left out by 1 Yoruba and 4 Nupe, the second by 1 Nupe only, the third by 2 Nupe only, the fourth by 1 Yoruba and 7 Nupe, the fifth by none in either group, the sixth by 1 Yoruba and 2 Nupe. The most interesting figure is the one referring to the fourth picture (the oasis) in which Nupe 'forgetfulness' reaches its maximum. For both groups, however, this picture represents a maximum also of meaning-oriented interpretation. This, I think, stresses an important point with respect to the evaluation of these results. It shows that we cannot simply say that meaning-oriented interpretation assists, or lessens, memory. For the meaning-oriented type of memory, meaning-oriented organization of the psychological material assists memory; for the enumerative type, into which it does not fit, meaning-oriented organization of the psychological material constitutes an obstacle to remembering. In short, the situation proves the impossibility of any simple comparative evaluation of the two types of psychological response in accordance with a common scale of exactness and, accordingly, of intellectual efficiency.

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(5) *Enumerative response*

What I called the 'enumerative' response type does not, however, represent a reaction devoid of all unitary organization or integration. It is enumerative only with respect to the meaning read into, or found in, the contents of the pictures. But there exist other aspects of organization

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in Nupe description and recall, which are absent, or nearly absent, among the Yoruba. I have found 3 such principles of organization: (1) The Nupe arrange their material very frequently in a spatial order, working with such descriptive categories as top and bottom, left and right, front and back. This emphasis on the spatial arrangement of the perceptual material seems to correspond to the stress on situational and temporal arrangement which we found prominent in the Nupe reproductions of the narrative. (2) There is the tendency to an integration or consistency in the material of a structural, formal character, such as consistency embodied in symmetric proportion. Imagination is engaged in the service of this specific form of integration, and we find, for example, in the picture of the two leopards that two trees are invented to match the two animals; or we find descriptions such as these:

(N 23) Two cats, white and red, one big, one small, close to two trees.

(N 7) A very beautiful horse, with two men, one standing in front and one standing at the back.

(3) Finally, there is an organizing principle, again working for some form of unification, which can be best described as unity of impression or of emotional tone. The following examples, which illustrate this attitude, refer to the third and fifth picture:

(N 6) A man, he is huge, he wears a big gown, he is an important man.

(N 7) An ugly man, wearing clothes which are not nice looking, holding something in his hand that looks like a snake.

(N 4) This (picture) looks as if one were sowing in all directions, like the sowing of European flowers of reddish colour; that is to say they are not quite red, they are between red and white, there are small ones and thick ones, some are not big, some are on the top and some stand out, enormously big.

This 'impressionistic', emotional attitude is not very pronounced in the Nupe reproductions. It is scattered irregularly, and seems to correspond essentially to the specific emotional response in the story experiment, which we interpreted as the expression of an independent, secondary psychological trait among the Nupe.

VI. CONCLUSIONS

The experiments have shown us a people possessing a highly developed realistic image-art, drama, and a rich, complicated, rationalized religious system, which, in the field of psychological reaction, appears characterized by stress on rational elements and logical cohesion, and by a strongly pronounced meaning-oriented approach to observational data. On the other hand, a people whose culture possesses no such art or drama, whose

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beliefs revolve round abstract, impersonal magical principles, proves psychologically of a very different type. It is more detached and inconsequent in observation and memory, enumerative, more sensitive to spatial and temporal arrangement, and stresses unity of situation and emotional tone rather than facts of meaning and rational consistency. The nature of this psychological differentiation clearly indicates that the experiments have done more than merely shown that a diversity in culture is accompanied by psychological differentiation; they prove the existence of an essential *correspondence* between the specific organization of the culture and the traits and dispositions which characterize the psychological make-up or 'type' of the group. Some aspects of this correspondence are quite evident and easily explained in terms of mutual interaction of culture data and psychological traits: for instance, the correspondence between the rationalized religious system of the Yoruba and their intentness on rational connexions and interpretations; or the correspondence between the ornamental, decorative art of the Nupe and their emphasis of spatial and symmetrical order. The nature of other aspects of this correspondence is less obvious, and can be interpreted only in the context of a detailed analysis of the whole culture: for instance, the correspondence between the impersonal, abstract religious system of the Nupe and their schematic, unspecific attitude to moral judgements.

The fact that we are dealing here with two groups which we had to contrast in various ways, may give the impression that I am attempting a dualistic theory of memory or perception, or for that matter, of culture. This is not my intention. Rather, the psychological traits and characteristics which the foregoing analysis has disclosed, seem to integrate themselves into *three* different 'types'—types which are distributed in different proportion among the two groups: first, the dominant type of the Yoruba, rational, logical and intent on meaning-oriented interpretation; second, the dominant type among the Nupe, combining an enumerative approach to observational data with stress on spatial and temporal arrangement; third, a less prominent, secondary, type among the Nupe, characterized by an emotional and 'impressionistic' disposition. Evidently, for a fuller understanding of these psychological types, the investigation must be placed on a broader basis, and our correlations of psychological traits extended over other fields of psychological reaction. But such an extension would go beyond the scope of this paper, in which I could only attempt to outline the general trend of this correspondence between psychological and cultural differentiation.

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VII. SUMMARY

1. The aim of this investigation was to study, by means of the psychological field experiment, the correlation between diversity of culture and psychological differentiation.

2. Two primitive groups were studied, two tribes in Northern Nigeria which, living under similar conditions, yet show marked differences in their culture.

3. The experiments were carried out with school boys of the age of 15–18. The selection of the subjects, however, insured that the experimental groups were representative of the culture at large.

4. The experiments examined the repeated reproduction of a narrative, and the description and remembering of a number of pictures. Both the narrative and the pictures represented a material with which the experimental subjects were thoroughly familiar.

5. The results show a marked difference in the responses of the two groups. In the story experiment one tribe laid stress on logical and rational elements while the other showed distinct appreciation of situational facts and connexions of time and place. In the picture experiment the response of the first group was meaning-oriented, the response of the second enumerative and appreciative of spatial arrangement.

6. Between the cultural differentiation and the psychological differentiation there exists close correspondence. The dualism of culture and psychological responses is incidental; the investigation reveals in fact three different psychological 'types' distributed in different proportion among the two groups.

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